What is claimed is:

1. A method for evaluating a fixing member, comprising:

carrying out the universal hardness for a fixing member which is used to fix a toner and has a surface layer by applying a pressure deformation to said surface layer of the fixing member, at a room temperature, wherein

when the deformation of said surface layer is within an elastic range, said fixing member is regarded as a standard product.

2. A method for evaluating a fixing member according to claim 1, wherein a depth of said pressure deformation is less than one-fifth of a thickness of said surface layer, and said hardness test is a universal hardness test.

3. A method for evaluating a fixing member used to fix a toner comprising:

carrying out the universal hardness test for an indentation depth of 1 μm from a surface of the surface layer of the fixing member at a room temperature, wherein

when the universal hardness HU for the indentation depth of 1 μm satisfies a relation,

$HU \leqq 30$ [N/mm^2],

said fixing member is regarded as a standard product.

4. A method for evaluating a fixing member used to fix a

toner comprising:

carrying out the universal hardness test for each of indentation depths of 1 μm to 4 μm from the surface of said fixing member, wherein

when the universal hardness HU for the indentation depth of 1 μm satisfies a relation,

$HU \leqq 30$ [N/mm^2],

and, when the universal hardness HU for the indentation depth of 4 μm satisfies a relation,

$HU \leqq 12$ [N/mm^2],

said fixing member is regarded as a standard product.

5. A method for evaluating a fixing member according to claim 4, wherein said universal hardness test is carried out at a test environment temperature of 25℃.

6. A method for evaluating a fixing member used to fix a toner, comprising:

carrying out the universal hardness test at a test environment temperature of 200℃ for each of indentation depths of 1 μm to 4 μm from the surface of said fixing member, wherein

when the universal hardness HU for the indentation depth of 1 μm satisfies a relation,

$HU \leqq 10$ [N/mm^2],

and, when the universal hardness HU for the indentation depth of 4 μm satisfies a relation,

$HU \leqq 4$ [N/mm^2],

said fixing member is regarded as a standard product.

7. A method for evaluating a fixing member according to claim 4, wherein a contact angle when a water-drop is contacted onto the surface of said fixing member is more than 95 degrees.

8. A method for evaluating a fixing member used to fix a toner, comprising:

carrying out the universal hardness test respectively at a room temperature and at a running temperature of the fixing member for each of indentation depths of 1 μm to 4 μm from the surface of the fixing member, wherein

when the each of the universal hardness at the same depth from the surface of said fixing member is compared, if the universal hardness at the room temperature is three times of the universal hardness at the running temperature, said fixing member is regarded as a standard product.

9. A method for evaluating a fixing member used to fix a toner, said fixing member being produced by sequentially coating an elastic layer and a separation layer onto a base element, comprising:

carrying out the universal hardness test for each of first and second indentation depths from the surface of said separation layer, wherein

when the universal hardness for each of said first and second indentation depths is in a predetermined value, said fixing

member is regarded as a standard product.

10. A method for evaluating a fixing member used to fix a toner, said fixing member being produced by sequentially coating an elastic layer and a separation layer onto a base element, comprising:

carrying out the universal hardness test for each of indentation depths of 1 μm to 4 μm from the surface of said separation layer, wherein

when the universal hardness HU for the indention depth of 1 μm satisfies the relation,

$HU \leqq 30$ [N/mm^2],

and, when the universal hardness HU for the indention depth of 4 μm satisfies the relation,

$HU \leqq 12$ [N/mm^2],

said fixing belt is regarded as a standard product.

11. A method for evaluating a fixing member according to claim 10, wherein said universal hardness test is carried out at a test environment temperature of 25℃.

12. A method for evaluating a fixing member used to fix a toner, said fixing member being produced by sequentially coating an elastic layer and a separation layer onto a base element, wherein

the universal hardness test is carried out at a test environment temp rature of 200℃ for each of indention depths of

1 μm to 4 μm from the surface of said separation layer,

when the universal hardness HU for the indention depth of 1 μm satisfies the relation,

$$HU \leqq 10\ [N/mm^2],$$

and, when the universal hardness HU for the indention depth of 4 μm satisfies the relation,

$$HU \leqq 4\ [N/mm^2],$$

said fixing member is regarded as a standard product.

13. A method for evaluating a fixing member according to claim 10, wherein a contact angle when a water-drop is contacted onto the surface of said separation layer is more than 95 degrees.

14. A method for evaluating a fixing member according to claim 10, wherein said elastic layer is made of silicone gum.

15. A method for evaluating a fixing member according to claim 10, wherein said separation layer is made of a material including at least one of polytetrafluoroethylene (PTFE) resin, polytetrafluoroethylene-perfluoro-alkoxyl (PFA) vinyl ether copolymer resin, and polytetrafluoroethylene-fluorinated ethylene propylene (FEP) copolymer resin.

16. A method for evaluating a fixing member according to claim 10, wherein said fixing member is a fixing belt.

17. A method for evaluating a fixing member according to

claim 10, wherein said fixing member is a thermal fixing roller.

18. A fixing belt used to fix a toner, wherein when a measurement is carried out at a test environment temperature of 25℃,

the universal hardness HU for an indentation of 1 μm depth from the surface of the belt satisfies the relation,

$HU \leqq 30$ [N/mm^2],

and, the universal hardness HU for an indentation depth of 4 μm satisfies the relation,

$HU \leqq 12$ [N/mm^2].

19. A fixing belt used to fix a toner, wherein when a measurement is carried out at a test environment temperature of 200℃,

the universal hardness HU for an indentation depth of 1 μm from the surface of the belt satisfies the relation,

$HU \leqq 10$ [N/mm^2],

and, the universal hardness HU for an indentation depth of 4 μm satisfies the relation,

$HU \leqq 4$ [N/mm^2].

20. A fixing belt according to claim 18, wherein a contact angle when a water-drop is contacted onto the surface of said belt is more than 95 degrees.

21. A fixing belt used to fix a toner, comprising:

carrying out the universal hardness test respectively at a room temperature and at a running temperature of the belt for each of indentation depths of 1 μm to 4 μm from the surface of said belt, wherein

when the each of the universal hardness at the same depth from the surface of said belt is compared, the universal hardness at the room temperature is three times of the universal hardness at the running temperature.

22. A fixing belt formed by sequentially coating an elastic layer and a separation layer onto a base element, wherein

when the measurement is carried out at a test environment temperature of 25℃,

the universal hardness HU for an indentation depth of 1 μm from the surface of said separation layer satisfies the relation,

$HU \leqq 30$ [N/mm^2],

and, the universal hardness HU for an indentation depth of 4 μm satisfies the relation,

$HU \leqq 12$ [N/mm^2].

23. A fixing belt formed by sequentially coating an elastic layer and a separation layer onto a base element, wherein

when the measurement is carried out at a test environment temperature of 200℃,

the universal hardness HU for an indentation depth of 1 μm from the surface of said separation layer satisfies the

relation,

$HU \leqq 10$ [N/mm^2],

and, the universal hardness HU for an indentation depth of 4 μm satisfies the relation,

$HU \leqq 4$ [N/mm^2].

24. A fixing belt according to claim 22, wherein a contact angle when a water-drop is contacted onto a surface of said separation layer is more than 95 degrees.

25. A fixing belt according to claim 25, wherein said elastic layer is made of silicone gum.

26. A fixing belt according to claim 22, wherein said separation layer is made of a material including at least one of polytetrafluoroethylene (PTFE) resin, polytetrafluoroethylene-perfluoro-alkoxyl (PFA) vinyl ether copolymer resin, and polytetrafluoroethylene-fluorinated ethylene propylene (FEP) copolymer resin.

27. A thermal fixing roller used to fix a toner, wherein

when a measurement is carried out at a test environment temperature of 25℃,

the universal hardness HU for an indentation depth of 1 μm from the surface of the roller satisfies the relation,

$HU \leqq 30$ [N/mm^2],

and, the universal hardness HU for an indentation depth of 4 μm

satisfies the relation,

$HU \leqq 12\ [N/mm^2]$.

28. A thermal fixing roller used to fix a toner, wherein when a measurement is carried out at a test environment temperature of 200℃,

the universal hardness HU for an indentation depth of 1 μm from the surface of the roller satisfies the relation,

$HU \leqq 10\ [N/mm^2]$,

and, the universal hardness HU for an indentation depth of 4 μm satisfies the relation,

$HU \leqq 4\ [N/mm^2]$.

29. A thermal fixing roller according to claim 27, wherein a contact angle when a water-drop is contacted onto the surface of said roller is more than 95 degrees.

30. A thermal fixing roller used to fix a toner, comprising:

carrying out the universal hardness test respectively at a room temperature and at a running temperature of the roller for each of indentation depths of 1 μm to 4 μm from the surface of the roller, wherein

when the each of the universal hardness at the same depth from the surface of said roller is compared, the universal hardness at the room temperature is three times of the universal hardness at the running temperature.

31. A thermal fixing roller formed by sequentially coating an elastic layer and a separation layer onto a base element, wherein

when the measurement is carried out at a test environment temperature of 25℃,

the universal hardness HU for an indentation depth of 1 μm from the surface of said separation layer satisfies the relation,

$HU \leqq 30$ [N/mm^2],

and, the universal hardness HU for an indentation depth of 4 μm satisfies the relation,

$HU \leqq 12$ [N/mm^2].

32. A thermal fixing roller formed by sequentially coating an elastic layer and a separation layer onto a base element, wherein

when the measurement is carried out at a test environment temperature of 200℃,

the universal hardness HU for an indentation depth of 1 μm from the surface of said separation layer satisfies the relation,

$HU \leqq 10$ [N/mm^2],

and, the universal hardness HU for an indentation depth of 4 μm satisfies the relation,

$HU \leqq 4$ [N/mm^2].

33. A thermal fixing roller according to claim 28, wherein a contact angle when a water-drop is contacted onto the surface of said separation layer is more than 95 degrees.

34. A thermal fixing roller according to claim 31, wherein said elastic layer is made of silicone gum.

35. A thermal fixing roller according to claim 31, wherein said separation layer is made of a material including at least one of polytetrafluoroethylene (PTFE) resin, polytetrafluoroethylene-perfluoro-alkoxyl (PFA) vinyl ether copolymer resin, and polytetrafluoroethylene-fluorinated ethylene propylene (FEP) copolymer resin.

36. A thermal fixing apparatus, comprising:

a heat roller which is heated by a heat source;

a fixing roller which is disposed parallel to said heat roller;

a fixing belt which is wound between said heat roller and said fixing roller, and is heated by said heat roller as well as is rotated by said both rollers, and

a press roller which is contacted to the surface of said fixing belt and forms a nip section between said fixing belt, wherein

when the universal hardness test is carried out for an indentation depth of 1 μm from the surface of the fixing belt at a room temperature, the universal hardness HU of said fixing belt satisfies the relation, $HU \leqq 30$ [N/mm^2].

37. An image forming apparatus, comprising:

a thermal fixing apparatus,

said thermal fixing apparatus including:

a heat roller which is heated by a heat source,

a fixing roller which is disposed parallel to said heat roller,

a fixing belt which is wound between said heat roller and said fixing roller, and is heated by said heat roller as well as is rotated by said both rollers, and

a press roller which is contacted to the surface of said fixing belt and forms a nip section between said fixing belt, wherein

when the universal hardness test is carried out for an indentation depth of 1 μm from the surface of the fixing belt at a room temperature, the universal hardness HU of said fixing belt satisfies the relation, HU $\leqq$ 30 [N/mm^2].

38. A thermal fixing apparatus, comprising:

a fixing belt, wherein

said fixing belt is formed by sequentially coating an elastic layer and a separation layer onto a base element, and

when the measurement is carried out at a test environment temperature of 200℃,

the universal hardness HU for an indentation depth of 1 μm from the surface of said separation layer satisfies the relation,

HU $\leqq$ 10 [N/mm^2],

and, the universal hardness HU for an indentation depth of 4 μm satisfies the relation,

HU $\leqq$ 4 [N/mm^2].

39. A thermal fixing apparatus, comprising:

a thermal fixing roller, wherein

said thermal fixing roller is formed by sequentially coating an elastic layer and a separation layer onto a base element, and when the measurement is carried out at a test environment temperature of 200℃,

the universal hardness HU for an indentation depth of 1 μm from the surface of said separation layer satisfies the relation,

$$HU \leqq 10\ [N/mm^2],$$

and, the universal hardness HU for an indentation depth of 4 μm satisfies the relation,

$$HU \leqq 4\ [N/mm^2].$$

40. An image forming apparatus, comprising:

a fixing belt, wherein

said fixing belt is formed by sequentially coating an elastic layer and a separation layer onto a base element, and

when the measurement is carried out at a test environment temperature of 200℃,

the universal hardness HU for an indentation depth of 1 μm from the surface of said separation layer satisfies the relation,

$$HU \leqq 10\ [N/mm^2],$$

and, the universal hardness HU for an indentation depth of 4 μm satisfies the relation,

$HU \leqq 4$ [N/mm^2].

41. An image forming apparatus, comprising:

a thermal fixing roller, wherein

said thermal fixing roller is formed by sequentially coating an elastic layer and a separation layer onto a base element, and when the measurement is carried out at a test environment temperature of 200℃,

the universal hardness HU for an indentation depth of 1 μm from the surface of said separation layer satisfies the relation,

$HU \leqq 10$ [N/mm^2],

and, the universal hardness HU for an indentation depth of 4 μm satisfies the relation,

$HU \leqq 4$ [N/mm^2].